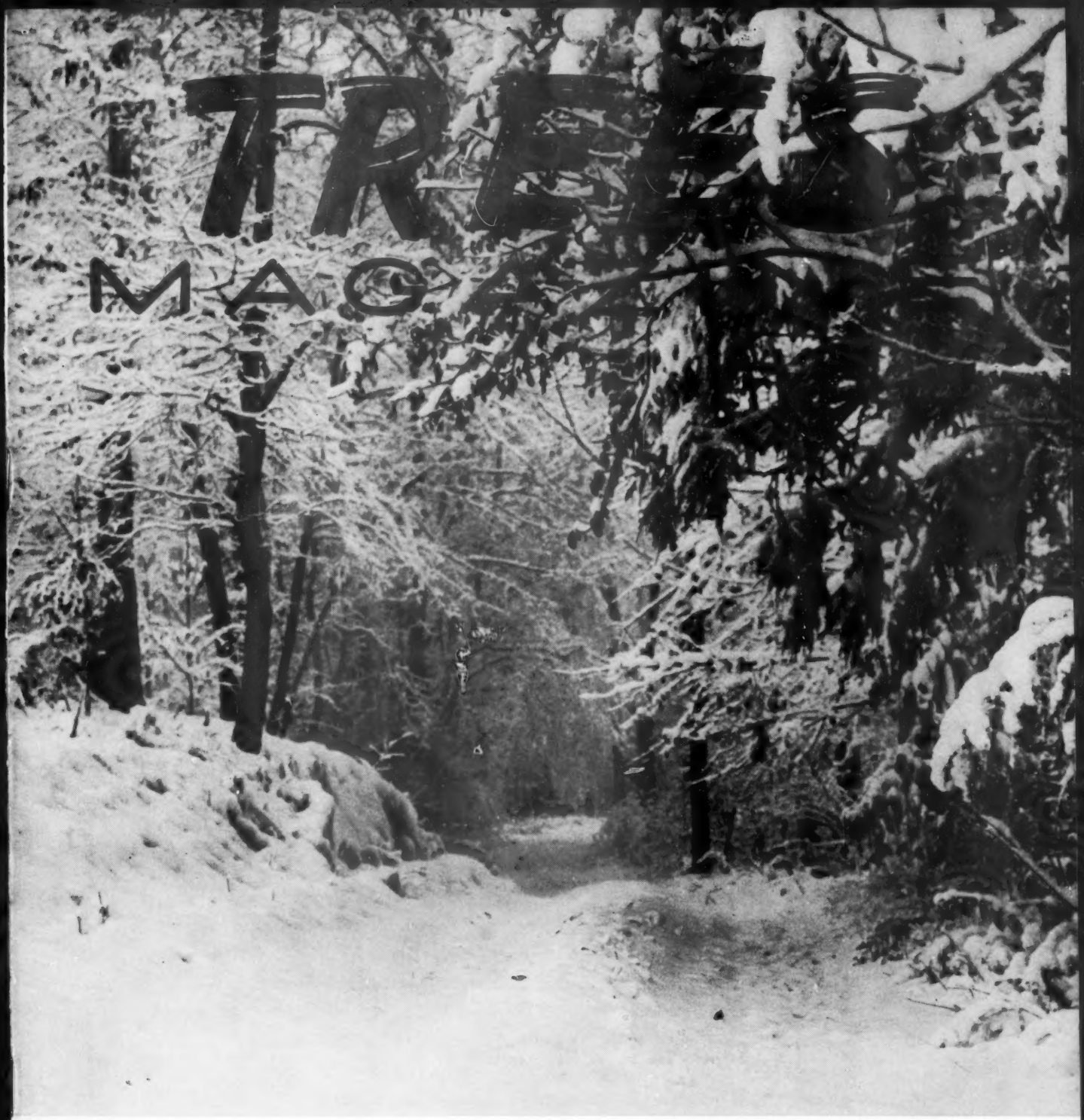
TREE MAGAZINE



The Road To The Rancho — Merry Christmas and Happy New Year To All

Mid-Western Chapter NSTC – Chicago, Ill.–February, 15-17

Plant Disease Control — *Wm. Klomparens & F. C. Strong*

Roadside Plantings — *Joseph L. Beasley*

November-December, 1960 *The Journal of American Arboriculture* Vol. 21, No. 1

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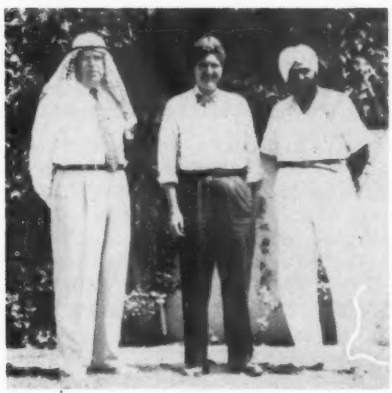
ALONG THE WAY With .... EDW. SCANLON

■ HOME AGAIN after a 35,000-MILE ROUND THE WORLD hop and I LOVED EVERY INCH OF IT.

■ The DEPORTATION WAS THE McCOY—in fact I have the TICKET MARKED "DEPORTEE" that I had to purchase to DEPORT MYSELF from BAGHDAD TO BEIRUT. Arrived in Baghdad and found I had NO VISA. The BUMS WOULDN'T give me a visitor's visa to wait for a FLIGHT TO TEHERAN, and wouldn't even let me contact the AMERICAN CONSUL. This I always thought was common courtesy. The STATE DEPARTMENT should climb all over THESE KNOTHEADS.

■ The WORST PART was that it COST ME $120 BUCKS. Arriving in Beirut I then HAD TO PURCHASE another ticket BACK TO BAGHDAD in order to complete my trip to Teheran. MIDDLE EAST AIRLINES slipped up on CHECKING MY PASSPORT for a visa—but I had a NICE LETTER OF REGRETS from them.



Neal Liming, Ed Scanlon, and Ginder

■ Spent FIVE GRAND DAYS as the guest of NEAL AND ROSAMUND LIMING in NEW DELHI. They had to LEAVE ON A BUSINESS TRIP the morning after I arrived and LEFT ME IN CHARGE OF THE household. It was fun, and thanks to GINDER, A SIKH, who works for NEAL I got around good and SAW THE WORKS, including a 124-mile trip to AGRA AND THE TAJ MAHAL, what a MAGNIFICENT SPECTACLE that is.

■ THRU NEAL I met MR. J. B. MATHUR, DIRECTOR OF HORTICULTURE for the NEW DELHI AREA. A fine gentleman and AN ENTHUSIAST FOR PLANTS if ever I met one. THRU HIS GOOD GRACES I visited among many places, the PRESIDENTIAL PALACE GROUNDS and the home of PRIME MINISTER NEHRU. Both are extremely beautiful and CAREFULLY TENDED.

■ The MIDDLE EAST and FAR EAST are fascinating. I liked the CHARM AND ROMANCE of cities like BANGKOK, SAIGON "the Paris of the east," and SINGAPORE. In fact THESE PLACES I MUST SEE AGAIN — especially AT THE SEASON when their multitude of MAGNIFICENT FLOWERING trees are IN BLOOM.

■ NOT TO SEE the wonderful TROPICAL TREES in flower was the ONLY DISAPPOINTMENT of the trip — but that WILL BE REMEDIED soon, health and WEALTH PERMITTING.

■ Before I FORGET IT there were two slight errors in the last issue which was SO CAPABLY PUT TOGETHER by our EDITORIAL ASSISTANT JUNE FAULDS. The COVER PICTURE which I had sent home, among others, FROM SWITZERLAND, without identification was improperly identified for her—it really is SEQUOIA GIGANTEA PENDULA. This unique tree is in a lovely park in Lausanne which I visited with ANDRE DESARGENS, the PARKS DIRECTOR. Quite an oddity—no?

■ THE OTHER was the FOLLOWING CUT used in CED CARTERS PAPER on WETWOOD (page 7) It was UPSIDE DOWN, but this was the PRINTERS FAULT—the bums. RAY LEE CAUGHT IT as did several others. We HOPE NO DRAINS have been PUT IN upside down HOWEVER.

This section of tree shows a drain hole bored at the proper angle to insure effective drainage and the drain pipe so inserted that it does not penetrate diseased wood (arrows) and interfere with drainage.

■ One of the BIG THRILLS of the trip was a THREE DAY STAY in the FAMOUS RAFFLES HOTEL in SINGAPORE. This old hotel is famed in many stories of the FABULOUS SINGAPORE and COLOR EXUDES from every crack in the floor. It is UNIQUE AND DISTINCTLY DIFFERENT from any hotel I have ever seen—THERE IS ONLY ONE RAFFLES.

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Vol. 21 Bi-Monthly No. 1

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TREES MAGAZINE
7621 Lewis Road,
Olmsted Falls 38, Ohio

The Editors of TREES invite discussions, comments and all type of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.

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■ The SHADE TREE CONFERENCE sponsored by the ROYAL HORTICULTURAL SOCIETY of Victoria at MELBOURNE was a VERY SUCCESSFUL MEETING and the sponsors SURE WORE ME OUT WITH HOSPITALITY. I hope THEO. BRUNN and GRAT GOULD my hosts HAVE RECOVERED.

■ One of the FINEST BOTANIC GARDENS I have ever seen is the one in MELBOURNE. It contains a MAGNIFICENT COLLECTION OF TREES from all over the world and I REGRET that I was just a bit too early to see most of the flowering trees in bloom—IT WAS SPRING and I'll bet not many of you lads HAVE SEEN KWANZAN CHERRIES in bloom IN OCTOBER.

■ REALLY AMASSED a wonderful LIBRARY OF SLIDES and black and white pictures tho. Took 30 ROLLS of 36 EXPOSURE KODACHROME and 60 ROLLS of BLACK AND WHITE—1800 pix to be exact. WHAT A JOB it is going to be TO CATALOG them.

■ One SURPRISING OBSERVATION was of the WIDESPREAD DISTRIBUTION and use of ROBINIA PSEUDOACCACIA—in Europe and the middle east as FAR AS NEW DELHI.

■ Got a line on 4 "NEW" TREES that impressed me TREMENDOUSLY in various places. But will have more on THESE LOVELIES later—also have a COUPLE IDEAS for some NEW CREATIONS.

TREES Magazine is a bi-monthly Journal published at Olmsted Falls, Ohio, by Edward H. Scanlon, and is devoted to the advancement of knowledge in the aesthetic and functional uses of exotic and native ornamental trees; to the advancement of research in pathological, entomological and physical disorders of ornamental trees; and to the education of the public to the advantages and need of using trees properly, both aesthetically and functionally. TREES Magazine is dedicated to the furtherance of the technical and business administration of Trees (Street and Ornamental); and Parks (Municipal and National) in the U. S. Scanlon Publishing Co., 7621 Lewis Road, Olmsted Falls, Ohio. Subscription by mail $3.00; outside United States $3.50. Advertising rates upon inquiry. Closing date for advertising copy—10th of month preceding date of issue. Unsolicited manuscripts must be accompanied by return postage.

November-December, 1960 *The Journal of American Arboriculture* Vol. 21, No. 1

Edward H. Scanlon, Editor **June S. Faulds, Ass't. Editor**

7621 Lewis Rd., Olmsted Falls 38, Ohio ADams 5-3314

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; A COUNTRY WITHOUT TREES IS HOPELESS."

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Out On A Limb

In Memoriam

CHARLES F. IRISH

NOVEMBER 20, 1960

On a clear, crisp November day Charlie Irish was laid to rest under a canopy of trees, in a site he would have loved. Charlie passed on November 20th.

The field of arboriculture has lost its outstanding exponent and unquestionably the leader in all phases of the science. It is difficult to understand how one person could be so thoroughly schooled in all phases of arboriculture, or any one science for that matter, as was Charlie Irish. Of course the fact that he lived and breathed trees, their use, care and problems, is without a doubt the secret of the urge that impelled him to study the subject through the medium of the printed record from the inception of the printing press. His library is a thing of beauty, and few collections anywhere in the world can equal it.

Charlie will leave the impact of his dedication to trees firmly imprinted on the consciousness of all who knew him and came into more than casual contact with him. He was intolerant of any who would not take the time to inform themselves to the degree that they could render service to the subjects they were supposed to serve. His own dedication to, and love for trees and the important place they held in the scheme of things, made him this way. And of course he was right, as he was in most things.

Charlie's firm, guiding hand in the several important arboricultural organizations he helped to establish, had an enduring effect in keeping them steadily forging ahead in a constant implacable search for knowledge and know-how. He was first in so many of the practices that are commonplace among today's arborists that it would be trite to repeat them.

All who knew him respected and loved him and the pity of it all is that Charlie could never find the time to transfer his vast fund of knowledge to book form. What a thing that would have been. But as the editorial honoring his passing in the Cleveland Plain Dealer so beautifully put it "He is survived by the many thousands of tree friends he planted and cared for." Au revoir Charlie.

Branches Of The Law

By Howard Newcomb Morse

Counsellor at Law of the Supreme Court of the United States of America

"A Tree Surgeon's Expert Testimony as to the Value of Shade Trees as Timber"

Clifford S. Banks brought an action in the Court of Common Pleas of Fairfield County, Connecticut, against Edgar G. Watrous to recover damages for the cutting of trees on his property. Watrous was rightfully engaged in lumbering operations on land called the Hanson tract, which adjoined that of Banks. Banks claimed that employees of Watrous cut 20 trees on his property, 12 of which had a diameter of one foot or more.

Upon the question of damages, Banks' witness Mr. Fennell, a tree surgeon, testified that he had made sales of standing trees for lumber purposes and that he was familiar with lumber values from that experience. He further testified that in his opinion as an expert the timber value of each of the large trees cut was $40, while Watrous' experts placed the value at from $4 to $5 per tree.

A jury returned a verdict for Banks and the court rendered judgment accordingly. Watrous appealed, claiming that Fennell's testimony should not have been allowed because it was not shown that he was qualified to testify as an expert as to the timber value of the trees, since it appeared that as a tree surgeon his knowledge related to shade trees rather than timber values, and further that by reason of his lack of knowledge of the latter values the grounds upon which his opinion was based were so unreasonable as to render it inadmissible.

The Supreme Court of Errors of Connecticut affirmed the decision of the Court below. The Supreme Court of Errors declared: "The qualifications of an expert is in the discretion of the trial court . . . The underlying principle is that if any reasonable qualifications can be established, the objection goes to the weight rather than to the admissibility . . . While it appeared that Fennell's activities had been primarily concerned with shade trees rather than timber . . . in the light of his testimony we cannot hold that the court erred in ruling that he was qualified to testify as an expert upon the timber value of the trees cut."

"Whether Injury Arose While Performing Duties as Tree Warden or Tree Surgeon"

Walter R. Markham was the tree warden of Middletown, Connecticut. He was killed while sawing off a limb of a public tree broken by an ice storm. The official duties of a tree warden were of a supervisory nature including the employment of persons to do manual labor in relation to public trees. In addition to his supervisory duties as tree warden, Markham, with the consent and approval of the selectmen, was engaged in the private business of tree surgery, doing necessary manual work upon public trees for which he was paid by the town.

Markham's widow and dependent, Catherine, filed an action in the Superior Court of Middlesex County to recover compensation from the town upon the ground that when injured her husband was in the employ of the town, and that his injury arose out of and in the course of his employment. The town claimed that he was killed in performing his duty as a tree warden, and that as a public official injured in the performance of an official duty was not entitled to compensation. The court rendered judgment in favor of the town, and Markham's widow appealed.

The Supreme Court of Errors of Connecticut reversed the decision of the lower court and decided in favor of Markham's widow. The Supreme Court of Errors, noting that Markham was not engaged in his supervisory work as tree warden when injured, held that he "was in the employ of the town, and his injury arose out of his employment."

Forestry College Awarded Grant

The State University College of Forestry at Syracuse University has been awarded a $5,300 grant by the National Science Foundation for renovation and improvements of the college's Herbarium, located in the Department of Forest Botany and Pathology.

According to Dr. Hardy L. Shirley, dean of the College of Forestry, the monetary award is one of a new series developed by the National Science Foundation.

Park Superintendent Is Montana Chairman

Vern Prill

Vern Prill was recently appointed Arbor Day Chairman for the State of Montana.

Mr. Prill is a former nurseryman and is now in his fourth year as park superintendent for the city of Billings.

According to information from Harry J. Banker, national executive secretary of the National Arbor Day Association, progress is being made to change Arbor Day in Montana to the last Friday in April. Mrs. Robert Hamilton, of Billings, presented the National Arbor Day idea to the Montana Federation of Garden Clubs in Helena this summer. The Federation voted in favor of sponsoring the changes needed at the next Montana legislature.

At this time, 15 states observe Arbor Day the last Friday in April.

U. of Mass. Requests Early Applications

Since dormitory and dining facilities for expansion will not be completed by the fall of 1961 at the University of Massachusetts, applications for Arboriculture should be received not later than May 1, 1961.

In previous years, summer applications were permissible; however, this is no longer the case. Some potential students were not admitted for the 1960 school year due to their lateness in applying.

Inquiries should be sent to:

Dean F. P. Jeffrey
Stockbridge Hall
University of Massachusetts
Amherst, Massachusetts

Australian Writes Poem for Editor

One of the highlights of the round-the-world trip our Editor recently completed came in Melbourne, Australia when he received a slip of paper from a stranger. The stranger had apparently been reading newspaper accounts of Mr. Scanlon's speeches (at the Royal Horticultural Society 1960 Conference) and was inspired to write the following:

Ode To A Tree

(written for Mr. Edward H. Scanlon, who loves trees
by Matthew Thynne, Melbourne, Vic., Australia)

Enleafed cathedral of colour-splashed bark
Hallowed by mystic light of stars and moon,
Laved in gold and shade by the sun at noon,
Fluted organ for the chorister lark.

In a paddock the once great tree now lies,
Formless, colourless in the heat of day,
A rotting old log in nobody's way,
Mute are sweet song birds when a great tree dies!

Plant Disease Control

By The Antifungal Antibiotic Acti-Dione

By William Komparens
The Upjohn Company
and
F. C. Strong
Michigan State University

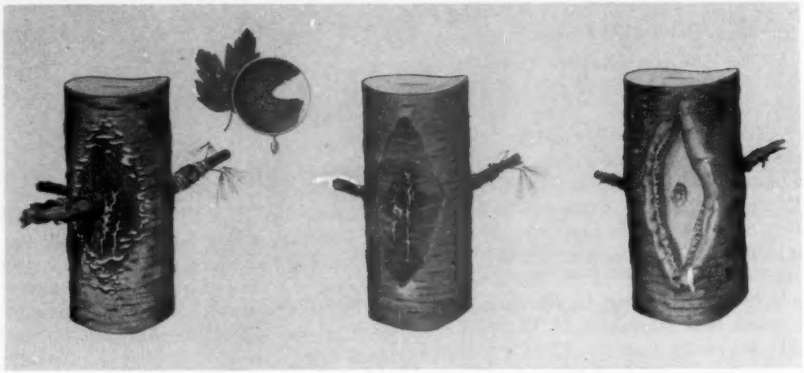

Fig. 1—At left, an untreated white pine blister rust canker. Bark killed in center of canker. Blisters containing orange-colored spores in live bark on canker margin. In the center, a canker six to ten weeks after treatment with Acti-dione BR. Inset, upper left, shows infection of Ribes leaf (currents and gooseberries). At right, appearance of a treated canker area three years later.

Last year four million western white pines were sprayed with an antibiotic in the forests of the Northwest. Some were healthy trees that might—or might not have grown to maturity unaided. The others — in very substantial numbers — were not healthy. They were already in the process of dying, the victims of a parasitic fungus known as blister rust.

The antibiotic sprayed on the white pines is Acti-dione.* Unlike most of the antibiotics commonly used in human medicine which are effective against bacteria, Acti-dione is effective against fungi.

This distinction is significant because certain other antibiotics now used commercially in plant pathology are antibacterials. Their function and areas of action are not similar to those of Acti-dione (3).

The antibacterial antibiotics — Agristrep,* Agrimycin,* Phytomycin* — are used in the control of bacterial diseases of peppers, tomatoes, philodendrons; and for fire blight of apples, pears and hawthorn. They are also used to combat blue mold in tobacco.

The discovery and development of Acti-dione led to new areas of use for antibiotics by furnishing control of fungus diseases of plants, such as powdery mildew and blights of ornamentals and shrubs, cherry leafspot, rusts of conifers and many turfgrass diseases.

The development of Acti-dione as a fungicide has involved the application of different formulations for specific uses. The inherent toxicity of Acti-dione to some plants at first limited its use to certain plant species. The addition of a chemical spreader-corrective has, in certain instances eliminated the problem of toxicity to sensitive ornamental plants, such as roses, and composition formulation with other pesticides continues to broaden the spectrum of disease control.

White Pine Blister Rust

Blister rust (fig. 1) is the most destructive tree disease affecting the white pine species of the U. S. and Canada. This disease was first found in the U. S. in a narrow local area, after its introduction from Europe 60 years ago. It is now widespread in almost all states where white pine species grow, and has wrought severe losses to all the commercially valuable species of five needle pines of North America.

For the past five years an average of 3¾ million dollars has been spent annually by States, private landowners, and the Federal government on control of white pine blister rust. This money was spent in high hazard areas within the 21 million acres of commercially valuable white pines found in the United States.

Since white pine blister rust must have two hosts, *Ribes* (currants and gooseberries) and the white pine (5-needle pine species), to complete its life cycle, the control measure has been to destroy the currant and gooseberry bushes in the area of white pine stands. The eradication of this host breaks the critical life cycle of the parasite and if pursued continuously leads to long-term control. Eliminating the alternate host, however does not save trees which are already infected. Also, it is often not economically feasible to eliminate gooseberry and currant bushes from the extremely large areas which surround pines planted along highways, in parks, and on private lands.

Recently, Mr. V. D. Moss (11) (12) of the U. S. Forest Service, described his experiences over the past several years in the Northwest with Acti-dione, leading to the events of 1959, mentioned earlier. In 1953, Mr. Moss found that Acti-dione, applied to the trunks of western white pine, killed the parasitic fungus in the bark, after which healing occurred. (Fig. 1). His original slit-and-excise methods involved removing or slitting the bark, then applying the antibiotic. This technique has now progressed to what is termed a "basal stem' application (Fig. 2), whereby no surgery is practiced and western white pine trees are conveniently treated as follows:

1. For trees up to twelve foot high, the Acti-dione (150 ppm.) in oil is thoroughly sprayed on the trunks to one-third of the lower crown height.
2. Trunks of trees over twelve feet high are sprayed with the mixture up to five feet or eye level.
3. The inner twelve to eighteen inches of branches originating in the treated area are also sprayed.

Moss *et al.* report that this basal stem method is proving to be very satisfactory (13) (14). In the Pacific Northwest, treatment with Acti-dione BR, a formulation using oil, has expanded rapidly. Beginning with treatment of only 500 trees in 1956, the basal stem application has increased to treatment of approximately 4 million trees in 1959. Cost of treatment is also reported to have been reduced to a few cents per tree.

Mr. Moss, during his observations, noted that not only were cankers within the treated areas controlled, but that trunk and branch cankers above the treated areas were controlled. This apparent systemic fungicidal action has recently been investigated as a cooperative U. S. Forest Service-Upjohn Company program. It has been found that the antifungal antibiotic was carried upward in pole-size western and eastern white pine. It remained for at least two years in the trunks of western white pine treated by the basal stem method, and,

although the antibiotic was applied *only* to the lower trunk area, it was recovered from needles of unsprayed branches as high as 25 feet above the area of application (8).

Tests conducted on other conifer species are incomplete but indicate that Acti-dione has promise for the control of rusts on sugar pine, eastern white pine, limber pine, whitebark pine, lodgepole pine, and Jack pine. Control of sweet fern rust *(Cronartium comptoniae)* on Austrian pine has been reported (18).

In addition to the pines previously listed, the antibiotic has been applied to Ponderosa pine in the west, and to slash and loblolly pines in the south. If this simple application technique proves to be effective with other diseases and on other tree species, including deciduous trees, rapid advances in the control of forest and shade tree diseases should result.

Red Cedar-Apple and Hawthorn Rusts

Control of rust *(Gymnosporangium juniperi-virginianae* and *G. globosum)* galls on Eastern red cedar was reported by the authors in 1955. A single spray of 100 ppm. Acti-dione in water, or 50 or 25 ppm. in water plus 0.5% summer oil, prevented spore production from the horns produced on the galls. The resulting infection on nearby alternate hosts, hawthorns and flowering apples (Fig. 3), was reduced to one lesion per 10 leaves (20). These results were further confirmed by Strong after five years of testing (18). Spraying of galls on red cedars after the horns emerge, but before they swell, prevents further development of the spore horns (Fig. 3) and thus reduces or eliminates spore production.

Researchers (15) in Illinois—Neeley and Himelick—also noted disease control following a single water-based spray applied with and without a sticker on April 25. The antibiotic was extremely effective at 200, 100, 50 and 25 ppm. Injury was apparent at the two high levels but the 50 and 25 ppm. applications were safe.

On a commercial apple variety as the alternate host, Swartwout reported that two applications of Acti-dione at 1 ppm., plus 1 ounce of Triton B-1956 per 100 gallons, effectively controlled cedar rust (22). He also reported "an undesirable, but not severe black spotting of foliage and fruit." A lower concentration of 0.5 ppm. caused no injury but it was too early to report on the fungicidal effect.

Hawthorn Leaf Blight

In 1957, F. C. Strong reported (21) that 3 sprays of 20 ppm. Acti-dione furnished excellent control of hawthorn leaf blight *(Entomosporium thuemenii)* (Fig. 4). In this publication he suggested that further trials, using lower concentrations, were warranted.

Such trials have now been completed and Strong recently reported the results of three years of additional experience (19). Using applications of 5 ppm. of the antibiotic, in the tablet form (Actispray) the same high level of control was obtained as that previously furnished by the 20 ppm. concentration. Three spray applications were used, at 14 day intervals, beginning about July 15. In excess of 90% of the foliage was retained at late as October 1. Conversely, unsprayed trees lost in excess of 90% of their foliage.

Fig. 2—Method of application of Acti-dione BR to basal area of white pine stems. Blister rust cankers in and above treated area are killed.

Cherry Leafspot

Cherry leafspot *(Coccomyces hiemalis),* on commercially grown tart red cherry, has been satisfactorily controlled by Acti-dione for many years (16), (2), (4). Recommendations for its use on flowering cherry have also been made (10). The antibiotic has an eradicative effect, and may be applied after leafspot lesions (Fig. 5) appear, but best results are obtained from thorough spraying of the foliage with 1 to 2 ppm. in a 3 or 4 spray schedule at 7 to 10 day intervals.

Miscellaneous Tree and Shrub Diseases

Black Knot of Plum

Lewis, et al., reported, in 1959, that surgery followed by 400 ppm. treatment (Fig. 6) with Acti-dione (1 - 380 mg. Actispray tablet per quart of water) furnished control of black knot cankers *(Dibotryon morbosum)* on Stanley prune (9).

Phomopsis Blight on Juniper

In 1957, Caroselli reported on an experimental fungicide designated as WK-34 for control of juniper blight *(Phomopsis juniperovora).* Using 1.2 ounces in 10 gallons of water in a 5 spray schedule in 1955 and 1956, he obtained consistent, safe blight control (1). WK-34 is now a commercially available composition fungicide, Acti-dione RZ. At the rate Caroselli used, the final spray contained 12 ppm. Acti-dione and 689 ppm. of pentachloronitrobenzene which was the other component of the mixture.*

Azalea Petal Blight

After several years of testing, Weiss

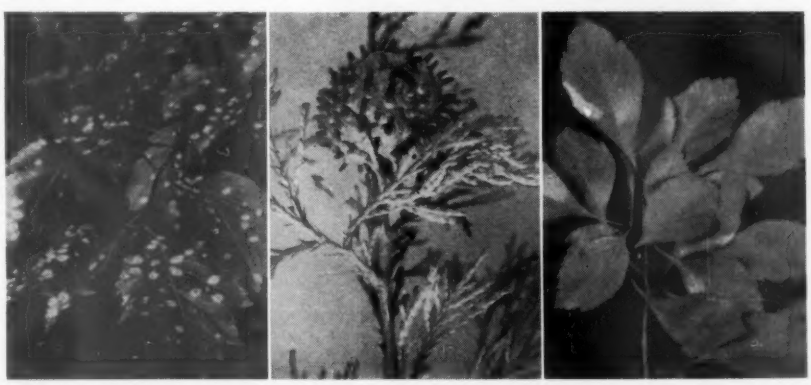

Fig 3—At left, yellow rust lesions on hawthorn leaves. An unsprayed red cedar nearby. Center: spore horns on rust gall on red cedar in Spring. Right: Reduction of rust lesions on leaves of hawthorn tree located within 20 feet of sprayed red cedar tree which bore a large number of rust galls.

Fig. 4—Hawthorn Leaf Blight

Fig. 5—Cherry Leaf Spot (yellows)

Fig. 6—Black knot of plum. Left: typical knot lesion. Right: method of application of Acti-dione (Actispray). (Photo by F. H. Lewis and George Van Horn, Penn. State Univ.)

Fig. 7—Powdery Mildew of Rose (Photo by Ray Nelson, Mich. State Univ.)

Fig. 8—Powdery Mildew of Phlox. Left: sprayed and healthy. Right: unsprayed and diseased.

← *Fig. 9*

Rust on Merion Blue Grass

Fig. 10 →

Leaf Spot Kentucky Blue Grass

(24) reported in 1960 on the results of using Acti-dione RZ for control of azalea petal blight *(Ovulina azalea,* Weiss). Acti-dione RZ was used at the rate of 1 ounce per square yard as a pre-bloom soil treatment and ¾ or 1 teaspoonful per gallon for pre-bloom and blossom sprays. Used in this manner and when applied as a *fine mist,* the antibiotic has furnished good control of the organism both in the soil and on the blossoms without leaving undesirable, visible residues on the blooms.

Powdery Mildew on Ornamentals

Recommendations for the use of Acti-dione on rose powdery mildew (Fig. 7) were first published by H. G. Swartwout in a University of Missouri Bulletin No. 689, entitled, "Spraying Outdoor Roses." These recommendations followed his earlier work which described the excellent eradicative effects of 1 and 2 ppm. Acti-dione sprays (22).

Commercially available as Acti-dione PM, the antibiotic is specifically formulated for maximum spreading and minimum damage on the sensitive hybrid tea roses.

One and 2 ppm. sprays also furnish powdery mildew control on tuberous begonia, phlox (Fig. 8), zinnia, crepe-myrtle, deciduous magnolia (black mildew), chrysanthemum, euonymus, honeysuckle, delphinium, Gloriosa daisy, hydrangea, cineraria, primrose, calendula, St. Paulia and snapdragon (5).

An experimental mixture of Acti-dione and captan is reported to furnish excellent control of powdery mildew and blackspot on roses when used in a preventive schedule.

Turf Diseases

In the past few years, Henderson (6), Klomparens (7), Shurtleff (17), and Weihing (23) have published recommendations for the control of turf diseases.

Listed as one of the "broad spectrum" turf disease chemicals, Acti-dione and its composition formulations with pentachloronitrobenzene (Acti-dione RZ) and with thiram (Acti-dione - Thiram) are recommended for control of lawn diseases such as powdery mildew, rust (Fig. 9), leafspot of Kentucky bluegrass (Fig. 10), gray leafspot and large brown patch on St. Augustine grass and fading-out on Bermuda. On specialized turf, such as creeping bentgrass, one or more of the compositions will control the above diseases and, in addition, are used for control of large brown patch, dollar spot, meltingout, pink-patch, fading out, leaf-spot, grease spot and snow mold.

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* Trademark

* Recently, while attempting to duplicate this work, Peterson, Huland and Weihing reported injury to Eastern redcedar. Plant Disease Reptr. 44:744., September 1960.

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College Assistantships

The College of Forestry of the State University of New York expects to offer 26 assistantships for the college year 1961-1962. Stipends vary from about $1,700 to $2,200 on a nine-month's basis.

Recipients are required to assist in teaching and research work for a maximum of 15 hours per week. Assistants may pursue studies leading to the Master of Forestry, Master of Science, and Doctor of Philosophy degrees.

Scholarships

Tuition waivers for deserving out-of-state students are also available in limited number. These cover tuition and fees to the amount of $350 per year.

Applications should be made not later than March 1, 1961. Additional information may be obtained from the Association Dean for Graduate Studies, State University College of Forestry at Syracuse University, Syracuse 10, N. Y.

Lecanium Scale Insects And Their Control

By Donald L. Schuder,
Purdue University

Ornamental trees and shrubs are affected by a large number of scale insects. The scale insects belong to the family Coccidae which, for our purposes, can be roughly divided into three groups:

1. The covered scale insects, example: the oystershell scale
2. The naked scale insects, example: the cottony maple scale
3. The mealybugs, example: the grape mealybug, a frequent pest of Taxus.

The lecanium scales belong to the group of naked scale insects. They are humped and resemble the shell of a turtle or terrapin. They are not covered or protected by a separate waxy shell as is the oystershell scale. The lecanium scale insects frequently differ from the covered scale insects in another important aspect. Most of the covered scale insects become immobile after they start to feed; the lecanium scales, however, frequently remain mobile and in the fall of the year move from the foliage back to the twigs and branches. The males are usually smaller and of a lighter color than the female. The sides of the male's body are often almost parallel.

Scale insects produce several types of injury:

1. Reduction in growth
2. Distortion of growth
3. Killing by devitalizing the plant and by blocking of conductive vessels with their myriads of styli
4. Secretion of sticky honeydew. Sooty mold grows in the honeydew and cuts down photosynthesis.

The lecanium scales have been quite abundant during the past two or three seasons. Many inquiries about and samples of these scales have been received by the Entomology Department. Some of the most frequent calls have been about the cottony maple scale, the tulip tree scale, Fletcher's scale on taxus, arbor vitae and junipers. The European Fruit Lecanium was common on many fruit and ornamental trees and was even found infesting a field of soybeans in 1958.

Fletcher's scale or the taxus lecanium, *Lecanium fletcheri* Ckll., is one of the troublesome species of lecaniums. The scale is hemispherical and amber to dark brown in color. This scale is a pest of yew, junipers and arbor vitae. One of the most common hosts is Cannaert's juniper, which is very sensitive to the commonly recommended insecticide, malathion. In hopes of finding another insecticide which would be effective and possibly not phytotoxic to Cannaert juniper, a series of insecticides were applied to this species of scale insect in 1958 and 1959. No local infestation of this scale was found on Cannaert juniper, but a block of infested yews was located and used as the test plant. The plants were sprayed on July 9 and July 25, 1958, just after crawler emergence. The wide spread in the application dates was due to torrential rains which fell during the middle of July. The sprays were applied with a Spartan sprayer, operating at 200 P.S.I. None of the insecticides used in this test gave evidence of phytotoxicity. On October 16, when the scales had reached overwintering size and were easily detected, twig samples approximately six inches in length, were taken at random from the plants and returned to the laboratory for examination under the binocular microscope. The results of this experiment are shown in the following table:

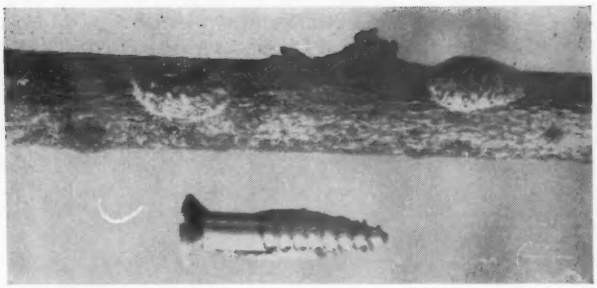
INSECTICIDE EVALUATION AGAINST *LECANIUM FLETCHERI CKLL.*, 1958

Insecticide and Formulation	Amount per 100 Gallons of Water	Average Number of Scales per 6" Twig
Thimet, 4 lb. per Gallon Emulsifiable Concentrate	1 Quart	0
Ethion, 4 E.C.†	1 Quart	0
Ethion, 4 E.C.†	1 Quart	
Triton B-1956‡	10 Ounces	0.2
Ethion, 4 E.C.†	1 Quart	
Plyac, sticker§	1 Quart	0.2
Compound 18706, 25% E. C.*	1 Quart	
Plyac, sticker§	1 Quart	0.4
Malathion, 57% E.C.*	2 Quarts	2.2
Sevin, 24E|| plus	1 Quart	
Plyac, sticker§		2.4
Compound 12880, 46% E.C.*	1 Quart	3.4
Sevin, 24E|| plus	1 Quart	
Triton B-1956‡	10 Ounces	4.8
Sevin, 24E||	1 Quart	8.2
Compound 18706, 25% E.C.	1 Quart	
Triton B-1956‡	10 Ounces	12.6
Korlan, 24EC¶	1 Quart	
Triton B-1956‡	10 Ounces	15.0
Korlan, 24EC¶	1 Quart	
Plyac	1 Quart	20.4
Check—untreated		33.2
L.R.S.D. 5%		4.29
L.R S.D. 1%		5.72

* American Cyanamid Company, New York 20, New York.
† Niagara Chemical Division, Food Machinery and Chemical Corporation, Middleport, New York.
‡ Rohm and Haas Company, Philadelphia, Pennsylvania.
§ General Chemical Division, Allied Chemical and Dye Corporation, New York 6, New York
|| Union Carbide Chemicals Company, New York 17, New York
¶ Dow Chemical Company, Midland, Michigan.

The data in this table indicate that all treatments were better than the untreated. The insecticides Thimet, Ethion, Ethion plus Triton, Ethion plus Plyac and Compound 18706 were the best treatments, although they were not statistically superior to Malathion, Sevin plus Plyac, Compound 12880 or Sevin plus Triton.

Since this experiment indicated that the new insecticides, Ethion and Sevin, might be used against the taxus lecanium, they were tested for control of this scale on Cannaert juniper in 1959. These two insecticides diluted at the same rate as in the previous experiment, were applied on June 24. Counts were made December 8. Only one live overwintering scale



The hickory lecanium is one of the largest lecanium scales. Compare the size of the insect with the one inch screw below.

was found on the five six-inch twig samples from both the Ethion and Sevin treated plants. There was no evidence of phytotoxicity and the grower indicated that the plants appeared better than those he was treating himself.

On the basis of this experiment, it would appear that the insecticides Ethion or Sevin could be suggested for the control of Fletcher's scale on malathion sensitive plants. Schread (13) has also found Thimet to be effective but it is too toxic for general usage.

The European fruit lecanium, *Lecanium corni* Bouche, is a widespread pest of a great many fruit and ornamental trees. It has been found on fruit trees of the genus *Prunus,* apple, persimmon, currant, grape and quince. The ornamental trees include arbor vitae, euonymus, alder, ash, basswood, beech, blackberry, walnut, boxwood, boxelder, butternut, Chinaberry, elm, hawthorn, hackberry, hazelnut, hickory, locust, magnolia, maple, mulberry, oak, osage orange, pecan, poplar, red bud, rose, sassafras and willow. The scale is hemispherical, convex and brown in color. It winters on twigs and branches, laying eggs beneath the scale the following spring. There are more than 1000 eggs per female scale. These eggs hatch over a prolonged period from May to July. The young scales are found on the leaves along the veins but they return to the branches prior to leaf fall.

A heavy infestation of Fletcher's scale or the taxus lecanium on yew. This insect also attacks junipers and arbor vitae.

This scale can be controlled during the dormant period with oil. Dormant oil in a 3 per cent concentration has proven effective on walnut and peaches (1). Superior type oils have proven safer than the ordinary dormant oils in the East (1). One to two hundred gallons of spray should be applied per acre of trees. The best time for control appears to be a summer spray for the young nymphs. DDT has been recommended (11), but malathion and parathion have been shown to be more effective (2, 9 and 10). Neiswander (12) in Ohio recommends either 2 pounds of 50 per cent malathion W.P. or 25 per cent parathion W.P. or 1 quart of 25 per cent parathion E.C. or 57 per cent malathion E.C. per 100 gallons of water. A mixture of 25 per cent DDT E.C., 1 quart, and 57 per cent malathion E.C., 1 pint, per 100 gallons is also effective.

A close relative of the above scale is the Terrapin scale, *Lecanium nigrofasciatum* Perg., which is widely distributed in the eastern United States and is commonly found on many fruit and shade trees. The preferred hosts seem to be maple, sycamore, boxelder and hawthorn; it is less frequently found on ash, cottonwood, European plane tree, mulberry, linden, persimmon, redbud, sweet gum and willow. The scale is nearly hemispherical, reddish brown with 10 or 12 dark bands radiating from the center of the back to the fluted edges. This latter characteristic is the reason for its common name.

This insect produces living young in June. It can be controlled by applying superior type oils in the dormant period or malathion in the summer (1).

One of the largest of the lecanium scales is the hickory lecanium, *Lecanium caryae* Fitch. This scale insect measures ⅜ to ½ inch in length when mature and is an elongate oval with a V-shaped notch at the rear. The common hosts of this species are beech, birch, elm, hickory, hicon, oak, walnut and willow. The life history of the hickory lecanium has never been worked out, but is apparently similar to that of the European fruit lecanium. While seldom abundant enough to require control measures, it is probable that, should spraying be necessary, the same materials suggested for the other lecaniums would be effective (8).

The magnolia scale, *Neolecanium cornuparvum* (Thro), is not common in Indiana but is quite abundant in some neighboring states. The magnolia scale is one of the larger scales. When full grown, the female scale may measure ½ inch in diameter. The scale is usually covered with an abundance of white waxy

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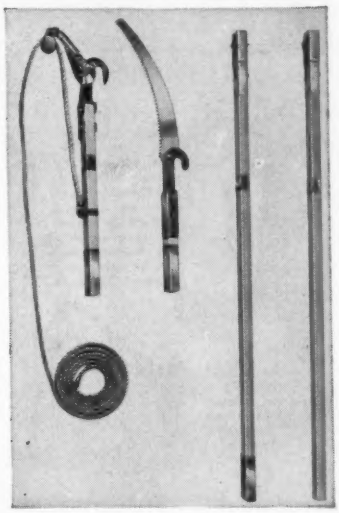

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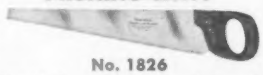

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bloom. When the waxy bloom is removed, the scale is a seal brown in color and quite convex. The magnolia scale can apparently exist wherever magnolia grows. This scale, like most of the lecaniums, has one generation each year. It overwinters as a nymph on the newer wood; in the spring, growth resumes and the females reach maturity by early August and produce living young. The insect can be removed by hand brushing in July if only a few small trees are involved (3). Spraying with one pint 57 per cent malathion E.C. per 100 gallons of water in late August is effective as a summer control. Dormant oils and scalecide have given adequate protection when applied during the dormant period (6).

The cottony maple scale, *Pulvinaria inumerabilis* (Rathr.), was more abundant than usual in 1959. The preferred host is silver maple but it will attack nearly all maples, locust, fruit trees and grape. This scale winters as a partially grown female attached to the bark. In the spring, growth resumes and 1500 to 3000 eggs are deposited in a white cottony mass several times the size of the original scale. Hatching takes place in late June and early July. The young nymphs move to the leaves until cool weather when they return to the bark. There is one generation each year.

Two insecticides, Sevin and malathion, were tested against the cottony maple scale in 1959. Sevin was applied at the rate of 2 pounds of the 50 per cent wettable powder per 100 gallons of water, and malathion was applied at the rate of 2 pints of the 57 per cent E.C. per 100 gallons of water on June 27. Five leaves from each treated tree were examined on July 9 under the binocular microscope. No live scales could be found on the leaves from the treated trees and examined for overwintering scales. No live scales were found. Both Sevin and malathion apparently gave 100 per cent mortality.

A related scale which has no common name, *Pulvinaria ericicola* McConnell, was found infesting an old established planting of rhododendrons at Valparaiso by one of the state nursery inspectors. This scale has been reported from the native *Rhododendron nudiflorum,* from Mollis and Kaempferi hybrids and Kurumes in cultivation. The scale is usually found at the base of the plant. When the infestation is heavy, however, the entire plant may appear white because of the scale's white ovisac. The insect has one generation annually and overwinters as a partially grown fertilized female. The formation of the ovisac and the production of eggs begins in early June. This rhododendron scale can be controlled by spraying with 2 per cent summer oil in mid-July and early August (5).

The Tuilp tree scale *Touymella Liriodendri* (Gmel), usually occurs on Tulip trees but has been reported from Magnolia and Linden. This is a large scale, the female measuring 1/3 inch across. The scale is very convex, hemispherical and a rich tan in color. The scales are often crowded together along the twigs and branches. The insect overwinters as a nymph which resumes growth in the spring. They mature in late July and produce young by August. There is one generation annually. On small trees, the scale can be brushed off during the summer, larger trees may be sprayed. During the dormant period, apply 3 per cent dormant oil spray, in August, apply Malathion at the rate of one quart of the 57 per cent E.C. per 100 gallons of water.

The Pine Tortoise Scale, *Toumeyella Numismaticum* P. and McD., is an insect which does not occur in Indiana but is found in neighboring states in sufficient numbers to be of economic importance. The Pine Tortoise scale is a fatal pest of Jack Pine. The scale overwinters as a partially grown, fertilized female. Growth is resumed in the spring and eggs are produced in early June. Crawlers emerge and disperse in late June and early July. Malathion emulsion in July, after crawler emergence, gives excellent control (4).

The Spruce Bud Scale, *Physokermes piceae* (Schr.), is a pest of spruce. The round bud-like scale are situated in groups of 3 to 5 at the base of branches and are often difficult to detect. The honeydew which these insects secrete attracts bees and is the substrate in which a black sooty mold grows. The insect winters as a partially grown scale. The young crawlers emerge in late June or early July. There is one generation annually. The spruce bud scale can be controlled during the dormant period with 2 per cent dormant oil or in July with Malathion (9).

The Oak Gall Scale or Oak Kermes, *Kermes Pubescens* Bogue, is a globular gall-like insect on the twigs and leaf petioles of white, Chinquapin, Burr and Red Oaks. The leaves become distorted and growth is checked. The scale winters on the bark, but in the spring the females emigrate to the leaves. There is one generation annually. The Kermes may be controlled by spraying in the dormant period with a superior type of dormant oil at the rate of 2 per cent, or with a crawler sprayer of Malathion in early August (7).

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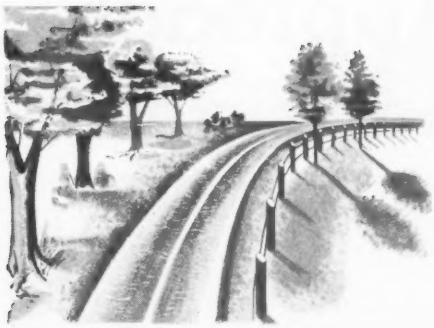
(Continued on Page 18)



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A Progressive Approach To Planting Roadsides

By Joseph L. Beasley

Highway Landscape Supervisor
Massachusetts Department of Public Works

Presented at the 36th National Shade Tree Conference—Statler-Hilton Hotel, Boston
August 15, 1960

I would like to point out initially the enthusiastic interest of Commissioner Jack P. Ricciardi and the entire Engineering Staff of the Department during highway planning, construction and maintenance in the functional importance of Roadsides as opposed to the past evaluation of this work as a *luxury* item.

The Commissioner's increasingly realistic consideration to the development and maintenance of attractive roadsides on our highways has been dictated by practical engineering viewpoint and necessity.

Trees, shrubs and ground cover are important in all categories of Roadside Development. Along a secondary highway, or "country road," we generally like to keep the roadside as close to its natural state as possible, consistent with safety and efficient maintenance. In direct contrast is the industrial or commercial highway where appearance competes with utility and efficiency. The state highways of Massachusetts fall in between these two extremes. The people of Massachusetts insist on well groomed highways, in keeping with the three-century tradition of having a village green in the middle of every town. But at the same time, their Yankee thrift demands that this scenic beauty be achieved at the lowest possible cost.

It must be evident to many that great strides have been made the last few years in restoring to our roadsides the traditional picturesque New England atmosphere. The average motorist is apt to relax into an air of comfort, taking for granted his natural environs without realizing that, for this very purpose, the proximity of this medium is the result of a well engineered landscaping program.

Our roadside development, under present policy, must keep pace with our great highway expansion program; hence, for new construction it begins with the highway design, to some extent even influencing the selection of location line. However, many factors must be considered during the laying out process: *economy* is the prime directive to concern both immediate expenditure and costs of future maintenance; *safety* is becoming a more appreciable function of our roadside design; *appearance* is of course a natural effect in the hands of our very experienced landscape personnel.

A portion of the Western Expressway, Fall River, Mass, showing a 150-200 foot slope mulched with wood chips and planted with seedling pines, vines and ground cover.

A roadside rest area on Route 93, Wilmington, Mass.

This then is our approach to roadside development in our new highway construction, and it must be added that in our economy-conscious approach, such work is accomplished by separate contract after completion of the highway construction. Experience has proved that two separate operations are more expedient in insuring satisfactory completion and far more economical than a single contract encompassing all phases of the work.

Planting With Purpose

An extensive plan to build preventive maintenance and safety into the 16,000 acres of land that border the 2,400 miles of state highway is already under-way.

Motorists wheeling along a five-mile section of the Athol-Orange Bypass on Route 2 will get a preview of what the Massachusetts Department of Public Works has in mind.

The roadside areas will be draped with various types of mulches and studded with group planting of 50 different species of hardy seedlings, shrubs, ground covers, natural sods and trees. Each is identified by label.

From this planting, the Department will determine what will look and grow best along the borders, in the cloverleafs and in the road dividers of the State's vast highway system.

Our primary purpose is to effect economy of highway maintenance. Landscaping of the roadsides with plantings—from Virginia Creepers to Mountain Ash — will eliminate great grass areas which otherwise must be constantly mowed through spring, summer and fall. Millions of seedlings and ground covers will be planted and thousands of tons of mulch will be used, but the program will pay for itself over a 10-year period by sharp reduction in the costs of maintenance.

This planting will also pay large dividends by preventing soil erosion and will be an asset in water conservation projects of the future.

Economy in future maintenance, however, was not the only reason for adoption of this planting program.

Safety was another major factor in our decision to launch the program. Interchanges are being planted with groups of large trees, groves of smaller ones and a belt of low shrubs to reduce mowing,

as indicated above, and for a pleasing appearance. However, in addition, the same group of plants along the roadsides and median strips sufficiently wide for safe planting provide a cushion for motorists who may swerve off the road. They won't hit concrete, brick or another vehicle. They'll hit a deceleration cushion of growth that may save their lives.

Furthermore, this planting will reduce the glare of oncoming headlights and serve as a guide on the outer edges of curves, around rotaries and on grade separation ramps. It will also relieve the roadside monotony which so often induces driver fatigue and self-hypnosis, responsible for many accidents.

Here, too, we are achieving greater road safety, which, after all, is one of the chief goals of the Department of Public Works. Actually, safety first and economy are the basis of our entire highway program. If, at the same time, we can improve the appearance of our roads and thus attract greater numbers of tourists, who now spend $400,000,000 a year in Massachusetts, then we will have done our bit to keep the State's economy healthy.

This planting program has been characterized as a "bread and butter" program "without luxuries or frills."

We are doing a creative job, geared to the dynamic flow of the landscape as it is viewed from the moving automobile, and we are being practical about it. We believe that natural and distinctive landscaping will mellow with age and create a heritage for future generations to enjoy. Above that, it will become an asset to our State and to its citizens.

Trees and shrubs are being planted in staggered, informal formations to break up barrenness and yet achieve the ultimate purpose of the program—elimination of grass mowing and other costly maintenance work.

Roadside slopes are being flattened wherever possible, roadside areas widened and their number increased and highway dividers broadened.

For shrubs and ground covers, the Massachusetts Department of Public Works is using, among others, Virginia Creeper, Bearberry, Bayberry, Oriental Bittersweet, Weeping Forsythia and Japanese Rose. The trees chosen are Norway Maple, American Hornbeam, Honey Locust, Flowering Crab Apple, European Mountain Ash and many others.

We have decided on small seedlings, small shrubs and small trees since they can withstand transplanting, therefore, live and grow successfully and the initial cost is lessened. This is a long range program. We have plenty of time to watch them grow.

Mulching

The mulch the Department has selected to protect plantings and induce natural growth consists of woodchips, shingle-tow and hay.

Mulching is becoming generally recognized as a highly important basic requirement for the success of any roadside development program.

It has been proved that woody mulches produce the best results on roadside planting programs and on erosion control projects. Consequently, the Department of Public Works will be using thousands of tons of Wood Chips and Shingle Tow in its Roadside Development and Soil Conservation projects.

The industry is strongly urged to conserve Wood Chips and also to increase the production of woody mulches so that they will be in a position to meet our demands for these materials.

Contract Roadside Maintenance

Contract Roadside Maintenance has expanded from a limited program consisting of tree removal and tree trimming in 1951 to a $1,000,000.00 program in 1960 to include in addition hay and grass mowing, tree planting, sterilant and custom spray for the control of noxious weeds and brush, DDT aerial and mist blown spray and spraying of succulent weed growth in grass areas, with 2, 4-D, which for the second year in 1960 is being applied in combination with 45% nitrogen as fertilizer.

Through Contract Roadside Maintenance we have been able to achieve a high standard of maintenance of 16,000 acres of roadside area adjoining our 2,400 miles of State highways with efficiency and economy which would be impossible otherwise.

To the side, on Route 28 and 125, Andover, Mass., the slope is covered with a shingle tow mulch and planted with seedlings. A later planting is scheduled to add Mountain Laurel.

It is noteworthy that Massachusetts is the first State to do all roadside mowing by contract and among the first to apply fertilizer in combination with 2, 4-D spray.

Tree Planting

Massachusetts is proud of its Annual Maintenance Tree Planting Contracts, whereby, a definite program of tree planting for the future is accomplished.

These trees are planted in groups or groves at various locations throughout the state. It is not desired that all planting be accomplished in any specific section in one year, as stage planting of areas, accomplished over a period of years, will insure the establishment of trees in various stages of maturity.

In an effort to reduce maintenance of barren, eroded slopes along our highways, we have now incorporated evergreen seedling planting as part of our tree planting contracts.

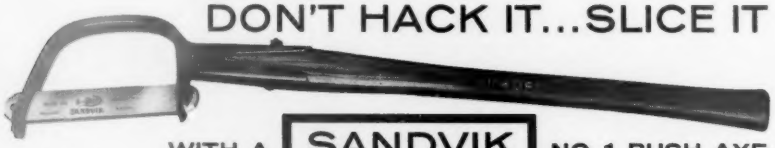
While the annual total of trees and seedlings planted under this program does not appear as being large in any given year, the annual planting and replacement has produced amazing results and the grand total since the program's inception is a very progressive step towards keeping trees on our roadsides for future generations.

Total of trees planted under this program, 1955 through 1960, 11,145. Total seedlings, 1958 through 1960, 97,100.

There is no single phase of our roadside development operations that can be identified as a "cure all" in the reduction of maintenance costs.

It is a well planned combination of contract mowing, planting and mulching,

DON'T HACK IT...SLICE IT



WITH A SANDVIK NO. 1 BUSH AXE

PRICE: $5.95

extra blades $1.00 each

It's easier, cleaner, faster to cut underbrush and saplings with this popular bush axe. Replaceable blade of tough Swedish steel will outlast the edge of an ordinary axe . . . and a new blade costs less than sharpening.

ASK YOUR DEALER FOR THEM.

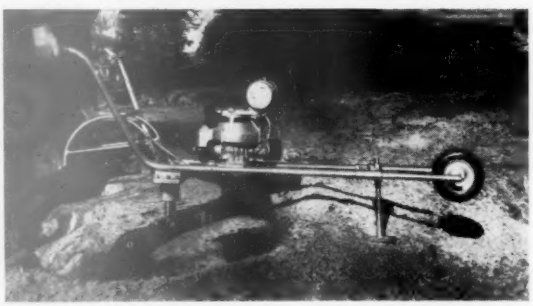
Sandvik STEEL, INC.
Saw & Tool Division
1702 NEVINS RD., FAIR LAWN, NEW JERSEY

SPEEDY STUMP REMOVER . . . .

No Stump Too Large or Too Small

Goes where the large machines can't go

A VERY IMPORTANT PATENTED FEATURE OF THIS MACHINE, is that it can be operated on uneven ground, excavations around stumps, slopes or hillsides. The cutter-head line of travel is not influenced by wheels rolling along over these uneven ground areas.



The tubular frame slides easily through sleeve-guides on a universal joint supported by a heavy stake, which is driven into the ground to any required stump removal depths. The cutter-head functions from side to side or forward or backward on the horizontal plane rather than unevenly.

Patented

Cuts as fast as you will guide it. Front rubber-tired wheel, for wheelbarrow-like transporting, simple spring controlled, swing-out-of-the-way stand and cutter protector and two cutter heads supplied for the low price of $379.50 F. O. B. Wauwatosa 13, Wis. This price is subject to change. Order at once from this ad. Satisfaction guaranteed.

Simple, trouble-free design—almost vibrationless. Rugged cutterhead of especially treated steel, withstands extremely hard usage.

Cuttershaft runs in sealed, lubricated bearings. The only lubrication necessary is in the motor.

IF MORE INFORMATION IS DESIRED, WRITE

WACHTEL SUPPLY CO.

611 MAYWOOD AVE., WAUWATOSA 13, WIS.

together with the use of herbicides and Maleic Hydrazide (MH-30) grass growth inhibitor, which bring about our greatest savings.

Roadside Rest Area Program

Trees are an important phase of this program; hundreds are planted to create shade and to improve the landscaping of the area. Two years ago in July, one area in Chelmsford, Massachusetts had 500 container grown and Balled and Burlapped trees planted with ninety per cent living.

For *safe, happy motoring,* Massachusetts has more than 325 Roadside Rest Areas actively in operation, with *2,600 tables,* being used by approximately *3,000,000* people last season.

We plan to bring total areas to over 350 plus 500 additional tables by next season.

Additional Rest Areas and Truck Turnouts are being planned in design on the INTERSTATE SYSTEM and will be constructed under the prime contract.

A number of these projects have already been accomplished. These areas will range in size from 3 to 6 acres.

Massachusetts believes in taking advantage of its scenic beauty and has many of its smaller Roadside Rest Areas (three to seven tables) placed at locations which take full advantage of nature at her best. These smaller Roadside Rest Areas range in size from one-half acre to one acre.

The people of Massachusetts, as well as visitors from all over the country, appreciate our Roadside Rest Areas and use them to their full capacity for safe, happy motoring.

We make every effort to impress on the traveling public the following:

Relax In Safety:

Use your Roadside Rest Areas to reduce driver fatigue.

Stop and let nature help you break the monotony of your drive.

A temporary rest now may postpone a permanent one later.

Selective Clearing, Trimming and Brush Removal on Both New and Existing Highways

Selective cutting of the natural growth is extremely necessary and of vital importance if we are to insure, preserve and safeguard the future health and growth of thousands of valuable trees, evergreens and shrubs on our roadsides, whose monetary value amounts to millions of dollars.

The selective clearing and trimming of the existing growth on roadsides, median strips and interchanges will reveal valuable native trees, evergreens and shrubs and will make future landscaping of these areas unnecessary.

The preservation of natural growth on

(Continued on Page 20)

CUT AFTER CUT AFTER CUT AFTER CUT AF

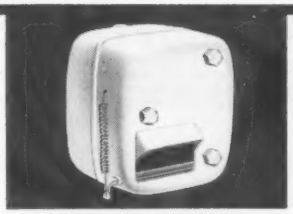
Dependability that stays on the job! Rugged, high-pressure die-cast alloy construction for more power at less weight. Precision ground crankshaft, forged rods, anti-friction bearings for economical operation and long engine life. Aircraft-type carburetor, extra capacity air filter, weatherproofed ignition for quick starts, all-position cutting.

Easier handling on the toughest jobs! Exclusive shock-absorber system: rubber pistol grip, rubber covered choke and oiler buttons, rubber padded handlebar soak up vibration, reduce fatigue. New two-position muffler with heat shield. New insulated fuel tank runs 20° cooler. New compact, lightweight body design, easy-carrying handlebar, fingertip controls. New Super Pintail® chain. Also choose dependable McCulloch accessories to fit all models.

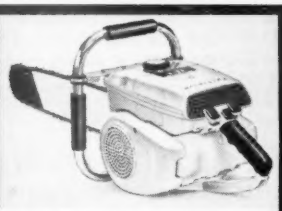
Seven new models for 1961. Built for comfortable cutting, unmatched dependability. Your McCulloch dealer is the man to see for a free demonstration of the new features that prove McCulloch chain saw superiority. For FREE literature, name of nearest dealer, write: McCulloch Corporation, Los Angeles 45, California, Department T-3.

NOTE THESE EASY HANDLING FEATURES FOR THE ONE/71 AND ONE/81

MODEL	ONE/71	ONE/81
Shock-Absorbers	Yes	Yes
Rubber Grips	Yes	Yes
Extra Quiet Muffler	Yes	Yes
Weight	21 lb.	24 lb.
Drive	direct	gear (3:1)
Bar lengths	Up to 30"	Up to 42"



NEW TWO-POSITION MUFFLER. Extra quiet for town use; wide open for timber land. Cuts sound, foils heat. Protective heat shield for safety.



NEW FEATURES CUT FATIGUE. Shock absorber handle bar, rubber hand grips, rubber covered choke and oiler buttons, molded rubber pistol grip.

7 MODELS
from which to choose
Prices start as low as $149.95
with full 16" bar
Easy terms

WEIGHT LESS BAR AND CHAIN. PRICES AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

1961 McCULLOCH CHAIN SAWS

Number One in World Sales—sold and serviced by more than 4000 dealers in the U.S., Canada and abroad.

■ McCulloch Corporation, Los Angeles ■ Marine Products Division (Scott Outboards), Minneapolis
■ McCulloch of Canada Ltd., Toronto, Canada ■ McCulloch International Inc., Los Angeles

LEADERSHIP THROUGH CREATIVE ENGINEERING

5-0402

machine: in June 1959 we purchased a Vermeer Pow-R-Stump Cutter.

Stump Removal

. . . wins public good will and adds beauty to Appleton, Wis.

By EDWIN DUSZYNSKI* Director of Public Works

Appleton, with a population of about 48,000, instituted a stump-removal program strictly as a public relations activity. During the first four months of operation, July through October 1958, we learned two things. First, if handled properly, this business of removing stumps can be accomplished quickly, satisfactorily and economically. Secondly, the results in public good will and better-appearing streets is well worth the small cost involved. Other benefits add to the program's value.

For many years the Public Works Department did offer some assistance to property owners faced with the problem of removing stumps along the parkway or boulevard strip between the street curb and sidewalk. This consisted of lifting out the stump and hauling it away after the property owner had excavated around and under the stump and cut enough of the roots for easy removal. We made no charge for this service.

Over the years many trees in the parkway had been cut down for various reasons. In most cases a chain saw had been used, with the cut made as close to the ground as possible. Only a few people undertook the task of digging out the remaining stump. Others resorted to whittling away at the stump with an axe, burning it from the top down, or drilling holes in the stump and applying chemicals to accelerate disintegration. Seldom did these methods result in a satisfactory job, and in most cases the stump was left intact to mar the appearance of the parkway.

Aldermen Investigate

In view of the interest of abutting property owners in improving the parkway strip, which is part of the street right-of-way, several aldermen felt that the city should take some action. The expenditure of city funds was justified in that the work would be on city property.

Research revealed that others had tried many types of stump removal equipment but a Vermeer stump cutter showed the most promise. On a trial basis we hired two retired city employees of an adjecent city who owned such a machine and were engaged in the stump-removal business. These men went to work on several troublesome stumps while several aldermen watched the operation. At the next budget time, these aldermen provided the impetus to include funds [illegible]

machine: in June 1959 we pu[illegible] chased a Vermeer Pow-R-Stump Cutter.

[illegible] of cutting a stump ten inches below the level upon which the tires rest. A larger machine is available that will cut 18 inches below grade. With either machine the cut below actual grade can be extended by excavating around the stump to permit the machine's wheels to be placed at a lower elevation.

The unit, mounted on two pneumatic tires, consists primarily of an air-cooled gasoline engine supplying power to operate a cutting wheel and hydraulic pump. The pump provides pressure for hydraulic movement of the cutting wheel either horizontally or vertically.

We use a Willys Jeep to tow

* Mr. Duszynski has served as Director of Public Works for the City of Appleton since 1954 and prior to that held the same position in Cudahy, Wis.

Thanks, Mr. Duszynski!

Mr. Edwin Duszynski, Director of Public Works in Appleton, Wisconsin, tells of his experience with the Vermeer Pow-R-Stump Cutter in the above article from the June issue of American City Magazine. "The most economical method of stump removal I know of," is the way he describes the action of the powerful model 10 Pow-R-Stump Cutter. This is just one of hundreds of outstanding recommendations received each year from cities, parks, golf courses, cemeteries and tree service firms all over the country.

PATENTED VERMEER POW-R-STUMP CUTTER MAKES CHIPS OUT OF STUMPS IN MINUTES

You'll save hundreds of man-hours and thousands of dollars annually when you remove ugly stumps with the Pow-R-Stump Cutter. Removes any size stump in minutes. It is an easy one-man operated unit. Allows close quarter cutting to sidewalks, buildings, curbs and driveways without damage. There's ONLY ONE POW-R-STUMP CUTTER . . . ask for a FREE demonstration. (Registered under U.S. Patent No. 2912022.)

MAIL COUPON FOR COMPLETE ILLUSTRATED LITERATURE AND LOW PRICES NOW

Send complete descriptive literature and prices on your POW-R-STUMP CUTTER to:

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TITLE or DEPT.....

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CITY..... STATE.....

VERMEER MANUFACTURING CO.

1454 W. WASHINGTON • PELLA, IOWA

Lecanium Scale

(Continued from Page 12)

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Dr. Robert Ealy Joins Staff at Kansas State

Dr. Robert P. Ealy of Oklahoma State University has been named head of the Department of Horticulture at Kansas State University, effective February 1, 1961. He fills the position vacated by W. F. Pickett, who retired from administration work July 1.

Dean C. Peairs Wilson of the School of Agriculture said Dr. Ealy's formal training is "a rare combination that fits programs planned by K-State University in teaching and research."

Dr. Ealy majored in horticulture at Oklahoma State University, majored in landscape design in his master degree program at K-State, then majored in landscape architecture with minor work in botany, horticulture, and art at Louisiana State University in his Ph. D. program. He is the author of many scientific journal articles, popular publications, and bulletins, and is a member of many scientific, professional and scholastic honoraries. He is listed in American Men of Science and in Who's Who in American Education.

Western Pine Ass'n.

Western Pine Association, the nation's largest lumber manufacturing association, has announced the appointment of McCann - Erickson, Inc., to handle the association's complete advertising and public relations program beginning January 1, 1961.

Leo W. Beckstrom, promotion manager for Western Pine, announced that R. A. Brown, McCann-Erickson account executive in Portland, will direct all agency services.

Diagnosing Tree Troubles

By Ray A. Keen
Kansas State University
Presented at the Midwest
Shade Tree Conference
Omaha, Nebraska, February 11, 1960

"Dear Sir:
All the leaves on my silver maple are turning yellow like the ones enclosed. I have limed my tree twice but it doesn't seem to do any good. Can you diagnose the trouble and recommend a treatment?

Mrs. ————————."

People are, without doubt, the biggest hazard that a tree can encounter. Especially those who love their trees and try to give them "tender care." The lady, who wrote the above letter, was wrong on two counts. The tree was not a maple, but a White Poplar *(Populus alba)*. They are called "Silver Maples" by many people. The lime-induced iron deficiency, or chlorosis, was only aggravated by liming the silt of the 1951 flood which has an average pH of 8.1.

The first requisite in diagnosing tree troubles is a knowledge of trees. Kinds of trees, growth requirements and the appearance of the healthy tree are essential. Any arborist worth his salt is a lifetime student of trees and he will still be learning at three score and ten. It is essential to know the kind of tree before one can use many of the books such as Pirone's or Dodge and Rickett's.

With a good knowledge of trees goes a broad knowledge of tree troubles. Insects and diseases, yes, but also the many pests and other troubles from a multitude of sources that weaken and damage trees. It is here that the limits of the mind are sooner reached and a good library is of prime importance. Books by Pirone, Dodge and Rickett, Rankin, Felt, and several others are among the most useful, especially the Disease book by Dr. Carter and the Wisconsin Bulletin No. 330. Current periodicals that keep one posted on new troubles that face our trees and new control measures are the mark of the professional arborist.

Do not hesitate to consult with specialists if you are not sure of the diagnosis. In most cases the need for treatment is not so urgent that this cannot be done. If the tree is that near dead it will die anyway, because the miracle of blood transfusion and plasma are not for trees. You can get help from other arborists, for a consultants fee of course. Your County Agent can do soil tests and suggest specialists in the Extension Service. The State forester and the State Nursery Inspector may be able to assist. Especially if the trouble threatens to become widespread. The departments of Horticulture, Entomology and Plant Pathology at your State Experiment Station are all ready to serve you when you need help with diagnosis, and recommendations for control measures.

Fat buds, like the ones above, give indication of a healthy tree. To make a test, cut a bud with your fingernail. If it is green inside it is healthy. However, if the moisture content of the tree is down, the green within will comprise only a small area and there will be a dry brownish appearance.

When starting in on a specific tree it is a good idea to check other trees of the same kind in the area. In addition to finding more customers, it will give you an idea of the prevalence and seriousness of the disease. Be sure to check the adjacent trees of all kinds, and the shrubs, flowers, weeds and grass. Very few diseases or insects attack more than one species or genus of plants. Bagworms and Red Spider are exceptions. Look for changes in grade, cuts or fills, recent construction work, sewer lines, paving, telephone lines, etc. These can result in changes in water table, up or down, that can weaken the trees in an area. The same kind of damage to several kinds of trees is usually man's doing.

One has a mental picture of the climate of the area for several months past but it will be necessary to inquire about the history of the tree. Fertilizing, sprays applied to tree and lawn, termite control applied to the house, traffic on the lawn? A small boy and a baseball bat can inflict real damage in the Spring when the cambium is soft. Any gas mains near? Lightning strike close by during the last storm?

Coming to the tree itself the leaves are the first thing examined. Their absence, or presence on the ground, is usually the first thing noticed and the reason for the customer's call. Then too, the leaves are readily accessible and show a host of signs and symptoms; far too many to enumerate here. Disease, scorches, deficiences, manner of feeding are all specific and part of the diagnosticians knowledge. If leaves are absent the condition of the winter buds is helpful. Healthy buds are plump with tight bud scales.

Twigs are a wonderful index of tree condition. The distance between terminal bud scars is a better criterion of annual growth than the annual growth rings revealed by an increment borer. They will often reveal that the tree was weakened two or more years ago and the current trouble is secondary, or possible only because the tree was in a weakened condition. Terminal bud scars are legible for six to ten years or more on some trees.

The main trunk and major branches can show many things. Cankers, sunscalds, borer attacks, wind and lightning damage, girdling wires and hardware, wetwood and various fungus attacks. Good trees are still widely used as hangers and anchors for many hoisting and pulling operations, often without the owners knowledge or consent. The junction of the trunk and ground is a critical point. A tree that enters the ground "straight as a pole" without any buttress roots is girdled by girdling roots or wires, hoops, pipes, etc. Or the buttress roots have been buried by a fill being placed over them.

The roots themselves will need examining. They should show some light colored new growth at the tips. Blue tips indicate lack of air, compaction, gas, several things that interfere or prevent

(Continued on Page 23)

NEW NYLON-BACKED CLIMBING SADDLES

More than 100% stronger, 7 oz. lighter, and more durable than present Webbed saddles.

SEND FOR DETAILS

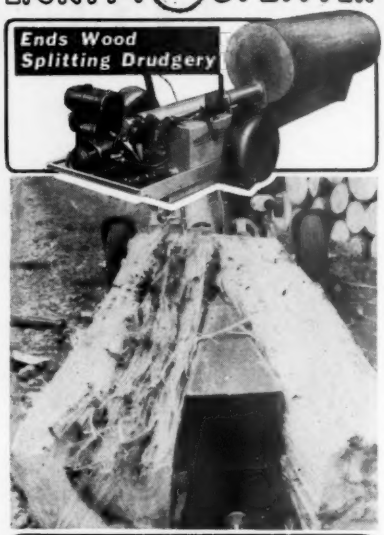
Fruit Growers of Chester County, Inc.

West Chester, Pa.

Complete line of
Tree Surgery Supplies

SEND FOR CATALOGUE

LICKITY LOG SPLITTER



Smooth 18 ton hydraulic power splits big profits for you from the toughest woods, including American Elm. 7 HP trailer unit squats under own power to receive large logs without "dead" lift. Has 2 speeds, auto-shift and auto-stroke. 26" ram travel splits up to 34" lengths, any dia.—or, with extended frame and adjustable wedge, splits up to 52" lengths, any dia. Write for details.

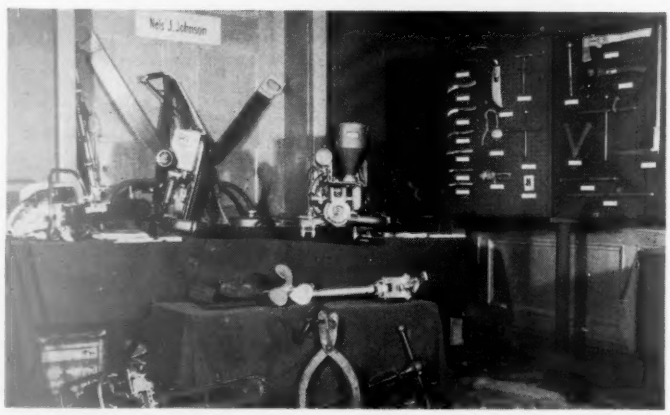
THE WACO AIRCRAFT CO., Dept. A, Troy, Ohio

DEALER INQUIRIES INVITED

Nels J. Johnson Presents

"Top Tree Tools" – Power Equipment

Finest Domestic and Imported Makes



Swedish Stainless Steel Tree Calipers, Increment Borers and Hammers, Pruning Saws, Propagating Knives, Pioneer Chain Saws, M & M Brush Chippers, Kieken Whirlwind Mist Blowers and Dusters, Aquaprobes, Imported Aluminum Shovels, Focowil (Forslund) Hydraulic Hoists.

Send For Complete Catalogue

MIDWEST POWER TOOLS, INC.

912 Pitner Avenue. GReenleaf 5-1877. Evanston, Ill.

Roadside Planting

(Continued from Page 16)

our highways will pay vast dividends by preventing soil erosion, contribute to the natural conservation of water and reduction of required water control projects of the future.

Selective clearing and trimming will open vistas and distant scenery which are now hidden from the traveling public.

The removal of dead trees and undesirable brush will clean the roadsides, making them neat and attractive and will greatly lessen the fire hazard danger that might exist.

The shavings from all cut limbs and brush (after they have been put through a chipper) can be spread on all slopes or other areas where erosion control is desired. This will greatly assist in the stabilization of the slopes treated.

Many roadside rest areas and turnout sites will be opened and developed by these projects. These sites should be a part of modern highway planning and are greatly desired and appreciated by the traveling public.

Increased sight distance and driver vision are other important considerations in planning this work.

The Department is hopeful of including selective clearing in its second contracts for Roadside Development on new construction.

Utilities

I am very pleased to be able to say that in this State, the Massachusetts Department of Public Works and the many utility companies have, on the whole, developed sufficient recognition and interest in each other's mutual problems that satisfactory cooperation is the rule rather than the exception.

Many of the problems of the past have been solved to the mutual satisfaction of both parties through the Department's development of policies of tree planting, tree trimming, tree removal and the requirement of tree replacement as such affects Utilities.

The Department's own tree planting program requires that only low growing, columnar and flowering trees are to be planted within the vicinity of utility wires. This one step alone will, in the future, eliminate a large portion of today's tree and wire conflicts.

This State's utilities are presently undergoing a rapid expansion of 13 K.V. installation—the results and cooperation of such projects, so far completed on State Highways, has been excellent. As the development of 13 K.V. lines demand a bold right-of-way, this State does require the utility to compensate for tree removal with a replacement planting for each tree removed. This policy insures the utility company and its consumers a practical service uninterrupted by tree damage and insures the citizens of the

Commonwealth the preservation of our natural scenic beauty.

A fine example of interest, understanding and cooperation on the part of the utilities is the publication of a booklet titled, "Trees in Your Community"—(A Handbook of Selected Trees for New England).

Outlook

History is in the making and there is an opportunity to participate in the greatest road building program the world has ever known.

This program will require a great need for your specialized services to an extent that you may now fail to realize or easily visualize.

The development of materials, equipment and construction methods for roadside work must keep pace with those of the road building industry at large.

It is your responsibility to improve your methods and "know how."

This expanded Highway Program will provide an additional outlet for your knowledge and abilities.

There are many problems that can be solved by constructive criticism and full cooperation of all concerned.

Conclusion

In summary, I have described to you what we feel is the foremost Roadside Development Program in the country, from the standpoint of progress, vision and practical economy.

A program of this magnitude could not be effectively carried out without the enthusiastic cooperation and interest of the entire Department staff. Much credit is due to our entire organization: the Commissioner for his foresight, the Engineers for their planning and application and the Supervising Tree Surgeons for their spirited participation.

We want to encourage your interest and participation in this program.

Your cooperation will be energetically sought and deeply appreciated..

(1) *You* the College and University Officials for your academic research and development.

(2) *You* the arborists and the tree warden for the results of your practical application of techniques.

(3) *You* the Utility Men who must carry the light, power and communication through this highway network to surrounding homes and industries.

Mid-Western
Chapter NSTC
Chicago, Ill.
February 15-17

FITCHBURG CHIPPER

"OPERATES 1693 HOURS without a breakdown of any kind!"

WELDON S. CAMPBELL
64 MUNSON STREET
GREENFIELD, MASSACHUSETTS

February 4, 1958

Fitchburg Engineering Corporation
Fitchburg, Mass.
Mr. Perini, Superintendent

Dear Sir:

On March 23, 1955, we purchased one of your Chippers. You may be interested to know that this machine operated a total of 1,693 hours without a breakdown of any kind. Inasmuch as we are paid for running time only we often start up the chipper 20 or more times daily.

We have followed faithfully your instructions in using a hone on the knives each morning, we find that by doing this we can use the knives for five weeks before sharpening. Even then only about 12 thousands are needed to bring them back.

Contractors find your chipper is ideal and saves them much time and dollars in clearing a woodland area before bull dozing begins.

Your Engineering skill and knowhow has resulted in the finest of all Chippers and I have seen them all in operation.

Hauling time is reduced two-thirds, this results in a large saving in gasoline, parts and labor. I would never again be without one.

Respectfully,
Weldon S. Campbell
Weldon S. Campbell
Tree Warden & Moth Supt.
Greenfield, Mass.

Fitchburg Wood Chippers are engineered to stand hard use, to give long service without excessive maintenance costs.

That's the "reason why" successful men like Weldon Campbell prefer Fitchburg for the tough brush removal jobs.

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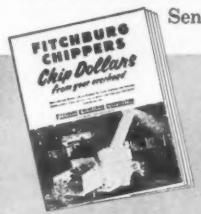

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Street Tree Symposium

Approximately 160 persons representing 52 municipalities attended the Fourth Annual Street Tree Symposium of the Saratoga Horticultural Foundation, Saratoga, Calif.

The three main speakers were William B. Davis, extension ornamental horticulturist, University of California; Walter L. Doty, director, editorial research, Sunset Magazine; and Maunsell Van Rensselaer, director, Saratoga Horticultural Foundation.

The main discussion centered on container tree plantings in downtown areas. A paper on this subject, written by Mr. Davis and Mr. Van Rensselaer, was presented to those in attendance.

Titled, "Preliminary Survey of Trees Growing In Containers on City Streets," the paper lists most of the species and varieties of trees being tested by the various communities; indicates some of the problems encountered; indicates the kind and size of containers being used; lists other species which may prove to be useful; and suggests experimentation which might be followed to attain a desirable street tree planting.

Though the area included in this survey is limited to northern and central California, some of the basic problems in this type of planting are common to most cities.

TREES readers will see the full text of this paper in the January-February issue, with illustrations.

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Prof. Rollins Retires

H. A. Rollins

Professor Howard A. Rollins, head of the Department of Plant Science at the University of Connecticut, is retiring after having been on the College of Agriculture staff for the past 30 years. Announcement of his retirement, which will become effective Jan. 31, 1961, was made by University President Albert N. Jorgensen.

Professor Rollins joined the staff at the University in 1930 as an extension fruit specialist and conducted research on fruit for 15 years in addition to teaching. In 1945 he was named head of the Plant Science Department.

In 1959 Professor Rollins was elected president of the American Society of Horticultural Science. He was also the recipient of the Certificate of Distinction from the Connecticut Pomological Society; the Alumni Meritorious Award from the University of New Hampshire; and the Award of Merit from Lambda Chi Alpha, national fraternity.

Horticultural Congress Meets at Pasadena

More than 100 delegates participated in the 15th American Horticultural Congress in Pasadena, Calif., November 9-12.

Tours were scheduled to Disneyland, Huntington Botanic Gardens, Los Angeles State and County Arboretum and several Southland nurseries.

New directors of the Congress are: Walter H. Hodge, Longwood Gardens, Kennett Square, Pa.; A. J. Irving, New York City; Mrs. Jesse Hakes, Glenwood, Md.; and Frederick Heutte, Norfolk, Va.

Special citations for important contributions to horticulture were presented to: Carl Sax, Arnold Arboretum, Jamaica Plain, Mass.; Dr. P. A. Munz, director emeritus of the Rancho Santa Ana Botanic Gardens, Claremont, Calif.; Gretchen Harshbarger, mid-west garden editor of American Home Magazine, Iowa City, Iowa; Jacques Legendre, Gulf Stream Nursery, Wachapreague, Va.; William Hertrich, director emeritus of the Huntington Botanic Gardens, San Marino, Calif.; and Mrs. J. Norman Henry of Gladwyne, Pa.

In addition, the third award of the Liberty Hyde Bailey Medal went to Dr. H. Harold Hume of Gainesville, Fla.

The 16th Congress will be held at Northhampton, Mass., Oct. 25-27, 1961.

Tree Troubles

(Continued from Page 19)

Some homeowner staked his tree securely with a piece of wire—so secure, that the tree is girdled and its life is in danger.

Correct staking benefits a tree. Here is a proper tie. The wire is inserted through rubber hose and a figure-eight tie holds the tree in position and still lets it breathe.

oxygen from reaching the roots. Some trees have black roots, i.e. Walnut and Buckthorn, so you must know the roots and, that you are observing the roots of the tree in question. The causes of dead roots are sometimes difficult to determine. It may take some careful sleuthing.

The tools required for diagnosis are a matter of opinion. A sharp knife and a 10 to 15 power hand lens will suffice for 95% of trees examined. The additional five per cent will require all the tools that one can use or buy, including high powered microscopes and laboratory equipment for isolating funguous and bacterial cultures. In general the more specialized work should be hired or the facilities of the State University can be utilized. Be sure you have plastic bags and containers, and mailing tubes, for taking diseased or insect infested specimens for the laboratory. A brace and bit or increment borer for determining the extent of decay in trunks and branches is most helpful. The number of tools in your little black kit is not as important, nor as effective, as the amount of knowledge under your hat.

MORE HELP ON DIAGNOSING TREE TROUBLES

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Pests and Diseases of Trees and Shrubs. Wisconsin State Dept. of Agri. Bulletin 330, 1955.

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The Use of Instruments in Tree Diagnosis Proceedings, N.S.T.C. 11:18-26. 1935.

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Dodge, B. O. and H. W. Rickett
Diseases and Pests of Ornamental Plants. Rev. Ed. Jaques Cattell Press, Lancaster, Pa., 1948.

Keen, F. P.
Insect Enemies of the Western Forests, USDA, Misc. Pub. 273, U.S.G.P.O., Washington, D. C. Rev. 1952.

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Rankin, W. H.
Manual of Tree Diseases. The Macmillan Co. New York, 1918.

Tilford, Paul E.
Diagnosing Shade Tree Troubles. Proceedings, N.S.T.C. 21:17-25. 1945.

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For Your Calendar

Indiana Arborists Association, winter meeting, Purdue University, Lafayette, Indiana, January 4-6.

New York State Arborists Association, annual meeting, Cornell University, Ithaca, New York, January 15-17.

Ohio Nurserymen's Association, annual winter meeting and OSU Dept. of Horticulture short course, Neil House, Columbus, Ohio, January 17, 18, 19, 20.

Kansas Arborists Association, annual meeting, Wareham Hotel, Manhattan, Kansas, January 19.

Seventh annual Kansas State Shade Tree Conference, Umberger Hall, Kansas State University, January 19, 20.

2nd Street Tree Clinic, sponsored by the Cleveland Electric Illuminating Co., Wade Park Manor, Cleveland, Ohio, January 25.

National Arborists Association, winter meeting, Statler-Hilton Hotel, New York City, January 29, 30, 31.

Mid-Western Chapter, NSTC, La Salle Hotel, Chicago, Ill., February 15-16-17.

Southern Chapter, NSTC, Lord Baltimore Hotel, Baltimore, Md., February 19, 20, 21.

BOOK REVIEWS

RHODODENDRONS AND AZALEAS (second edition), by Clement Gray Bowers. The Macmillan Company, 60 Fifth Avenue, New York 11, N. Y. 526 pgs., illus., $25.00.

The first edition of this book was published in 1936. About this second edition, the author says: "It is mainly concerned with the cultivation, origins, hybridity and development of the rhododendrons and azaleas, their uses in horticulture, and the various kinds with reference to their adaptability in gardens. It is definitely written from the American viewpoint. It has been kept readable for the ordinary gardener, while offering considerable valuable reference data for the technician."

Included also are important new additions to the bibliography, a finding list, and a recent German systematic arrangement of the genus, hitherto unavailable in English.

Dr. Bowers, a research associate of Cornell University, is a well trained horticulturist and there is no doubt that the information in this book is of great value in the study of rhododendrons and azaleas; however, it seems that the format of this edition could have been improved with the addition of color photographs instead of color paintings. The natural beauty of living flowers would far surpass the artificial coldness of these reproductions.

PLANT DISEASE HANDBOOK, by Dr. Cynthia Westcott. D. Van Nostrand Company, Inc., Princeton, N .J. 800 pgs., illus., $13.50.

For serious gardeners and the experts who advise them, this handy volume of information has been revised to include descriptions of over 2,000 plant diseases reported in the continental United States on more than 1,000 host plants. Plant Disease Handbook is organized to afford quick, accurate detection of diseases caused by bacteria, fungi, viruses, nematodes, nutrient deficiencies and other nonparasitic factors. Trees, shrubs, vines, lawn grasses, flowers, vegetables and native plants used for home wild gardens or for park and highway plantings are all included.

Recent findings on nematodes and virus diseases make an important addition, and the information on chemicals and treatments has been brought up to date. The author's additional ten years of research on these subjects has been added to increase the value of the book.

Frequent drawings and photographs made by the author illustrate all important entries. A careful index makes reference easy for diseases and common and botanical plant names. A glossary of terms and selected bibliography are further aids to the efficient use of this handbook.

Dr. Westcott is also the author of "The Plant Doctor," "The Gardener's Bug Book," "Anyone Can Grow Roses," "Garden Enemies," and "Plant Doctoring Is Fun."

FOREST AND SHADE TREE ENTOMOLOGY, by Roger F. Anderson. John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 428 pgs., illus., $8.50.

In the past, books on forest entomology have fallen into two main categories: those which concentrate on basic principles and those which provide information on individual insect species and problems. This book, however, covers both aspects of the subject. To accomplish these goals, the author divided the book into sections:

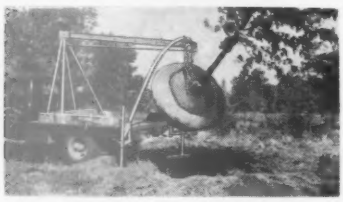
Section 1—presents the fundamental principles of insect structure, physiology, development, classification, and ecology. In addition, this section also sets forth the basic principles involved in the choice and application of insecticides and the planning and execution of forest insect surveys.

Section 2—offers detailed discussion and description of the more important forest insect species. Biological information is included for each species with regard to hosts, distribution, appearance, life cycle, and the relative efficiency of available control methods.

The book contains many photographs, line drawings and tables, all stressing characteristics which are readily observable in the field.

Mr. Anderson was formerly an entomologist in the Forest Insect Division of the United States Department of Agriculture and is at present professor of forest entomology at the School of Forestry, Duke University.

(additional book reviews on page 26)



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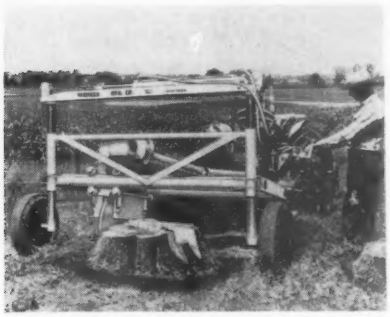
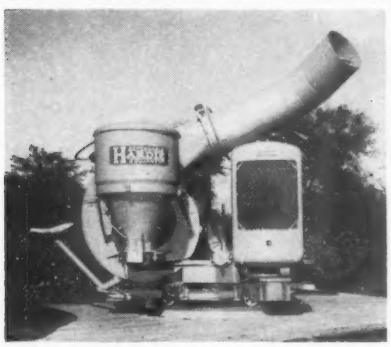


The Vermeer Pow-R-Stump Cutter is a one-man operated machine that cuts stumps to shreds in minutes and is safe and simple to operate. One man controls the entire cutting operation with three conveniently located levers. Three separate hydraulic cylinders control the side-to-side motion of the cutting wheel, the height of the frame, and the horizontal motion of the frame.

According to Vermeer, the cutter can handle any size stump to 33 inches in height and has a travel range of six feet from side to side and 33 inches forward and backward. It digs out the stump down to 15 inches below the surface of the ground.

The cutter is 141 inches long, 84 inches high and weighs 3,030 pounds. It takes hydraulic power and operating power from any tractor with standard PTO up to 65 belt HP. For further information contact the Vermeer Manufacturing Co., 1454 W. Washington, Pella, Iowa.



The new Hardie L-80 A duster attachment pictured above was introduced at the National Shade Tree Conference in Boston. The attachment can be installed on Aero-Mist sprayers already in the field. For further information contact Mr. Clarence D. Hunter, assistant sales manager, The Hardie Manufacturing Co., Inc., Wilkes-Barre, Pa.

A Royalier series of high pressure pumps incorporating a new principle to provide a pulsation-free stream of spray material was recently introduced by John Bean Division.

The Royaliers are additions to the established line of John Bean pumps, including Royal, Royalette, and Spartan. This line now includes 3, 5, 10, 15, 20, 25, 35 and 60-gallon-per-minute capacity models. The new pumps are offered as the J-15 Royalier with 15 gpm capacity at pressures up to 400 pounds and the J-20 Royalier with 20 gpm capacity at up to 300 pounds pressure

The pulsation free Royalier pumps have four corrosion and wear resistant sapphite cylinders, heavy-duty ball bearings and positive action, spring loaded stainless steel disc type valves. For further information contact John Bean Division, Food Machinery & Chemical Corp., Lansing 4, Mich.

A single application miticide and a polyethylene spreader-sticker for all pesticide sprays are among the latest products for arborists developed by Allied Chemical's General Chemical Division.

The miticide trade named "Genite" 923, has been reported unusually effective on ornamentals for control of red spider, spruce mite, clover mite and others. Effective protection is provided for elm, walnut, oak, willow, spruce, pine, azalea and arborvitae trees infested by these mites. Genite is available in wettable powder and emulsifiable forms.

The new spreader-sticker, "Plyac," is a liquid product made from a special form of emulsifiable polyethylene developed and produced by the division. Used with insecticide, fungicide, herbicide and other agricutural and pest control sprays, it is said to improve initial and residual effectiveness of sprays and be able to reduce dosages or number of applications otherwise necessary. For further information contact Allied Chemical Corp., 40 Rector St., N. Y. 6, N. Y.

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DR. WILLIAM KLOMPARENS
Co-Author
"Plant Disease Control by the Antifungal Antibiotic Acti-Dione"
Paga 6

Dr. Klomparens is the head plant pathologist in the Agricultural Research and Development Section of The Upjohn Company, Kalamazoo, Mich.

His principal research interests are mechanism of action and disease control with antibiotics, turfgrass diseases and development of agricultural pesticides. Dr. Klomparens has authored or co-authored 14 technical and semi-popular papers dealing with identification and disease control on turf, ornamentals, shrubs and trees.

Born in Holland, Mich., Dr. Klomparens completed his undergraduate work at Hope College, Holland, Mich. and received his B.S., M.S., and Ph.D. (1953) in plant pathology from Michigan State University. He attained his present position at The Upjohn Company in 1956. Dr. Klomparens and his wife have two daughters and a son.

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FORREST C. STRONG
Co-Author
"Plant Disease Control by the Antibiotic Acti-Dione"
Paga 6

Mr. Strong is associate professor of forest tree and shade tree pathology at Michigan State University where he has been a member of the faculty since 1926. He received both his B.S. and M.S. from M.S.U.

In addition to teaching, Mr. Strong is actively engaged in research activities principally concerned with studies leading to the practical control of some of the serious diseases of shade and forest trees including red cedar-apple and hawthorn rust control on cedars; hawthorn leaf blight; elm leaf spot; and damping-off of conifer seedlings in nurseries. He has also been researching Dutch elm disease, oak wilt, chestnut blight, hypoxylon, and maple canker diseases.

DR. DONALD L. SCHUDER
Author of
"Lecanium Scale Insects and Their Control"
Paga 10

Since 1949 Dr. Schuder has been working on a research problem entitled: "Insect Problems of Shade Trees, Shrubs and Fruit Trees in the Nursery." The paper printed in this issue is Purdue University Agricultural Experiment Station Journal Paper No. 1568.

A prolific writer, Dr. Schuder has had his works published in Arborists News, Proceedings Indiana Academy of Science, Journal of Economic Entomology, American Nurseryman and Indiana Nurseryman. He has been editor of the Indiana Nursery News since 1955. The last paper he contributed to TREES was "Shade Tree Gall Insects and their Control."

Dr. Schuder received his B.S., M.S. and Ph.D. from Purdue University and is now an assistant professor in the department of entomology. He and his wife, Mary, have two sons.

JOSEPH L. BEASLEY
Author of
"A Progressive Approach to Planting Highway Roadsides"
Paga 14

Mr. Beasley is a native of Arlington, Mass. and was reared in the florist business. Following wartime service in the U. S. Army, he became affiliated with the Massachusetts Department of Public Works.

In addition to his regular duties as highway landscape supervisor, which involves statewide travel in supervising the technical planning and execution of all roadside projects, Mr. Beasley has been devoting much of his time addressing various civic and professional groups in the more progressive experimental aspects of his chosen field.

The paper published in this issue was presented by Mr. Beasley at the NSTC meeting in Boston this year where it was received with wide acclaim.

RAY A. KEEN
Author of
"Diagnosing Tree Troubles"
Paga 19

Dr. Ray A. Keen has been teaching Ornamental Horticulture at Kansas State University since 1947. His publications have been in the fields of plant propagation, woody ornamentals and turfgrass management. He is responsible for organizing the Central Plains Turfgrass and Kansas State Shade Tree Conferences.

The paper presented in this issue was first printed in the proceedings of the Midwest Shade Tree Conference, Omaha, Nebraska.

Dr. Keen is a native Kansan and has degrees from Kansas State and Ohio State University. Between degrees he was with the U. S. Navy from 1942-46.

THE CHRISTMAS TREE, by Daniel J. Foley. Chilton Company, Book Division, 56th and Chestnut Sts., Philadelphia 39, Pa. 160 pgs., illus., $3.50.

Daniel J. Foley, a former editor of Horticulture (1951-1957), has written a book that will make its own rich contribution to the traditions of Christmas and the Christmas tree.

The Christmas tree, most popular and beloved symbol of our most festive season, has a background of folklore nearly as rich as that of the Christmas crib.

The Tree has inspired scores of legends and an endless number of stories which the author relates: the tales of the Glastonbury Thorn, the kissing bunch of Merrie England, the Yule log of the Druids, the ancient myths of Scandinavia, the Universe Willow of China and many others.

In addition there are many ideas for decorating Christmas trees, illustrated in color, half-tones, wood engravings and original line drawings. A lovely book for your library or a family gift.

THE BIOLOGIST'S HANDBOOK OF PRONUNCIATIONS by Edmund C. Jaeger, D. Sc. Charles C. Thomas, publisher, 301-327 East Lawrence Ave., Springfield, Ill. 318 pgs., illus., $6.95.

This is a small book (4½ x 7½) that is easy to handle and still includes over 9,000 commonly used and often mispronounced technical terms. There are also 62 drawings by Morris Van Dame and the author.

As a special aid to learning, each specific name is given its original Greek or Latin meaning or English equivalent.

Acceptable pronunciation of each word is indicated by its division into parts by means of hyphens, by accent, and by diacritical marks. For ready reference, a table showing the needed diacritical marks and the sounds of the letters which they govern has been placed inside both the front and back covers of the book. Mr. Jaeger is curator of plants at the Riverside (California) Municipal Museum.

(additional book reviews on page 24)

Fashions In Trees

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Safety to workers and passers-by. Asplundh blades are tapered and wedged—cannot fly out.

Ease of operation. Unskilled labor can operate the Asplundh with ease—change blades quickly.

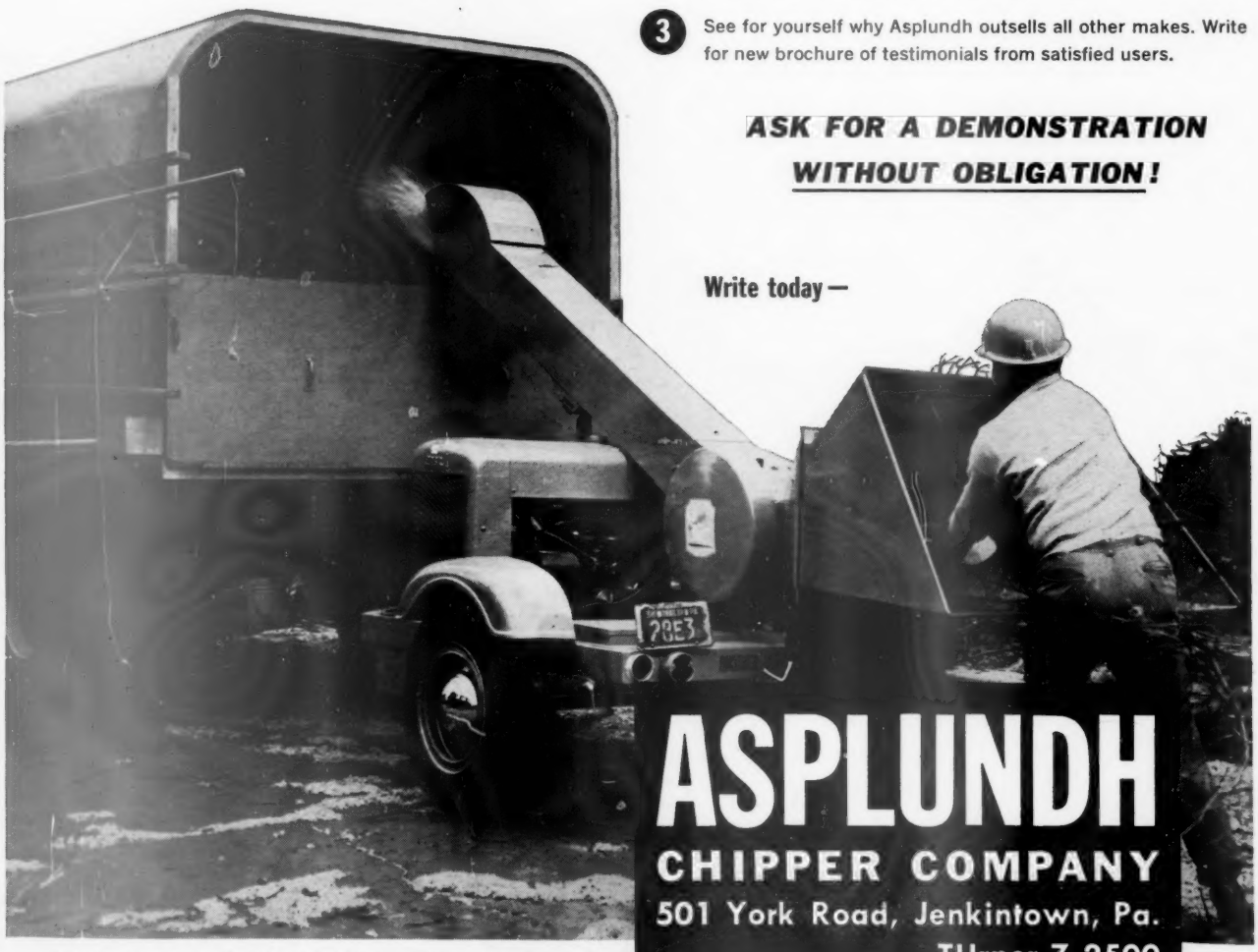
Highway safety. Asplundh's underslung engine and axle place the center of gravity low for safe, true highway tracking.

Big capacity. Asplundh chips all you can feed it—limbs up to 6" diameter—hour after hour, day after day.

3 See for yourself why Asplundh outsells all other makes. Write for new brochure of testimonials from satisfied users.

ASK FOR A DEMONSTRATION WITHOUT OBLIGATION!

Write today—



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